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Subby gets slimed : a role for stories in environmental education

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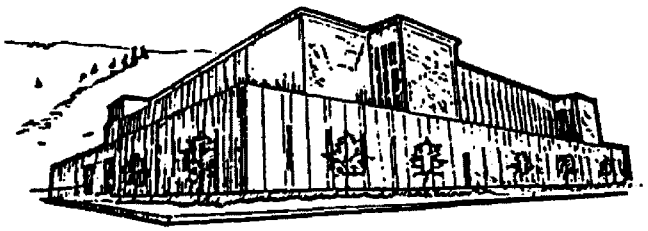

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Subby Gets Slimed
A Role for Stories in Environmental Education

by
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B.A. Swarthmore College, 1989
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Subby Gets Slimed: A Role for Stories in Environmental Education

Chair: Ronald Erickson RE

Subby Get Slimed is a children's story with illustrations that addresses the issue of oil spills. Subby, an intelligent, anthropomorphic submarine, is trapped by the oil slick and unable to absorb the solar energy she needs to survive. Using the resources at her disposal, she manages to obtain help for herself and other stricken animals. One clean of the oil herself, she too assists in the clean up of the spill. In the course of doing so, she muses over alternatives to oil, and how she can help humans use less oil.

This story is one in a series of stories developed in conjunction with Dale Woolhiser, of Coeur d'Alene, ID, and Carolyn Duckworth of Missoula, MT.

Attached to the story is an essay addressing the role of stories as a teaching method. This essay offers a definition of story, discusses how stories teach knowledge, values, and models for action, and reviews several popular environmental stories for ecological accuracy, action-taking models, and values portrayed. The essay then analyzes Subby Gets Slimed under the same criteria.

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note: the two parts are separately paginated as they are in very different formats and bound differently

A Role for Stories in Environmental Education

Kir Talmage
May 1994

Once Upon a Time, I Wanted to Tell a Story

I am, among other things, an environmental educator. In that role, I want to provide a rich background for my students' ethical development, and to assist them in building a sense of responsibility. I also want to provide a creative way for listeners to comprehend ecological processes and perceive how they fit into those processes. These goals grow out of my thinking on what environmental education is *for* (which is at least another essay in itself!), and from a sense of myself as a teacher. Andrei Toom sums up my teaching purpose rather neatly, if generally: "it is a most important duty of a teacher of humans to teach them to be humans; that is, to behave responsibly in unusual situations."[1] I believe that for people to behave responsibly, they need a foundation encompassing a sense of self and their philosophy, and the general ecological understanding that applies to these "unusual situations."

I suspect many teaching techniques assist in the development of this foundation, but I am most curious about stories and storytelling. Can I use them to achieve this? There is no question that stories are a *traditional* means of teaching. What and how do stories teach? In the context of today's educational demands, am I justified in using them?[2] Most specifically, when I write or tell a story, what can I do to make it teach what I want it to

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[1]Andrei Toom, "A Russian Teacher in America", American Educator (Fall 1993): 10.

[2]These two questions may seem obvious, but I need to explore this. I have a great deal of fun telling stories, but I feel that I should not rely on stories as a teaching tool without some academic justification. This investigation is my search for and thoughts on that justification.

teach? How will I know that my story has accomplished that? I think about stories both within and without books. As I try to examine these questions, I will switch between considering stories themselves and the telling of them. I will limit myself to discussing stories as teaching tools for the age groups I have worked with: children 5-8 and 11-13.

A Definition of Story

By "story" I mean a tale or narrative that has one or more events, conflicts, problems, or situations linked by a character (or several) experiencing, reacting, and changing due to those events, and in turn limiting what becomes possible. A story includes information about people, places, different types of actions, varied feelings, descriptions, details, and images. Those images may be part of the story (as in many books), or they may be generated by the listener. Well-written stories include only relevant information.[3] They organize what in real life would be a confusing mass of data, ideas, feelings, etc.[4] Regardless of the amount or form of this information, a story has limits. It must have a beginning; it must have an end. Even stories that are part of an on-going series, such as mine, have an end.[5]

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[3]At least, this is what several of my teachers have told me. Other writers and editors have corroborated this. My reading experience implies this is more true for children's stories, fables, and picture books than for novels, novellas, and short stories. I will talk more about choosing stories later.

[4]For other definitions of story (some more or less parallel with mine), see also: Kathy Carter, "The Place of Story in the Study of Teaching and Teacher Education," Educational Researcher 22 (1): 5-7; and Catherine Horne Farrell and Denise D. Nessel, The Effects of Storytelling: An Ancient Art for Modern Classrooms (San Francisco: The WordWeaving Program, 1982), 11, EDRS, ED 225 155, microfiche.

[5]Stories that are part of trilogies (or other similar formats) often take the form of extended chapters. Such stories may or may not be complete unto themselves. The fantasy novels by David Eddings are typically not complete alone, but are essentially large chapters in a multi-volume story

This coherence makes the information in a story manageable. Treating a complicated subject as part of a plot that will be completed keeps that subject within understandable boundaries. For example, telling a story of a successful dealing with a large environmental issue breaks that huge, ongoing situation into a comprehensible unit. Bardwell suggests that this scope is critical: "If the scope of the problem is too all encompassing, the issue may seem overwhelming. If it is too small, it may be dismissed."[6] Thus, if an author puts a problem into a story, that problem must be of a size that the characters can handle if that problem is to be solved by those characters.

I have seen stories that include history and ideas, narrate events, explain processes, or introduce concepts and facts. I have read stories that provide a prelude to or model for action and change. Characters within the story develop and examine their philosophical bases. Within the story, each of these elements has a place that depends on the relationship to and between the other parts. This weaving together makes the ideas in a story understandable as a whole.

(three-five books, usually. On the other hand, each of the books in Lloyd Alexander's Chronicles of Prydain can stand alone. They are part of as series, rather than one story that requires several books to tell. The Subby stories are part of a series. Each book should be a complete story, able to be read and understood without having read the other stories necessarily.

[6]Lisa Bardwell, "Success Stories: Imagery by Example," Journal of Environmental Education , vol. information not known,: 8.

Thought

In general, researchers agree that children pass through various cognitive stages as they grow.[7] The Virginia Department of Education developed a short list of cognitive characteristics of children which provides a broad summary of these stages. Children in the lower grades tend not to use formal logic in their thinking, and they are developing their sense of cause-and-effect, but they are still limited in understanding time and space. They have short attention spans, and consequently want quick results. They "enjoy pictures and read their own experiences into them," and are developing their own sense of self. They also "enjoy listening to stories read to them." Older children begin to develop their ability to handle and comprehend more intricately linked cause-and-effect situations, where there are several variables. They begin to examine and develop their own beliefs, and are ready to examine issues and develop decision-making capabilities based on a more complex understanding.[8] These characteristics do form a spectrum. Norton's textbook, Through the Eyes of A Child elaborates on them in charts that break these characteristics into more age-specific categories. At the moment, however, this broad brush is sufficient. The children I have taught fall into the first category (lower grades) or hover on the cusp of the second (upper grades).

How do these cognitive characteristics connect to stories? Because stories offer

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[7] Researchers may not agree on what those stages are, of course, but there does exist a consensus that children change in noticeable, if not precisely measurable, ways.

[8]Division of Elementary, Secondary, and Vocational Education, State Department of Education, "Characteristics of Children: Implications for Environmental Education," xeroxed excerpt from "Environmental Education Guide, K–12," (Richmond, Virginia: Division of Elementary, Secondary, and Vocational Education, State Department of Education,, 1974).

packets of coherent information in a variety of lengths, the younger children can have the quick results they want with short stories, while I can use longer ones with older children who can handle the extended wait for results. I can choose stories of the length and complexity appropriate to the group I have. I can use longer and more complex stories to stretch older children's understanding and ability to relate several concepts to a whole. In addition, many researchers say that using stories to make sense of the world is something we do because we are human.[9] Story "is not just some casual entertainment; it reflects a basic and powerful form in which we make sense of the world and experience."[10] Perhaps this is most obvious with younger humans adapting stories they know into their make-believe play.

Image

The images from stories are part of that whole. The visual aspects of a story, whether present in illustrations or imagined, affect the message offered in the story. Ideally, the images add to the plot, expand on or emphasize the plot, but (except in wordless books) do not offer a substitute for the text. Images communicate things children recognize (such as anger or fear) in a way that extensive verbal description cannot, or in cases where the author does not want to include that many words.[11] Illustrations can dramatize alternate perspectives by setting up an unusual viewpoint, such bird's eye or ant's eye views. The artistic techniques employed in the illustrations convey mood and emphasis.

For many children, the images instead of the verbal expression provide the way to

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[9]See Farrell and Nessel, 1; and Fisher, 1989 cited in Carole Tallant, "Telling With, Not Telling To: Interactive Storytelling and At-Risk Children," Paper presented at the Annual Meeting of the Speech Communication Association, Chicago, 29 October -1 November 1992, EDRS, ED 355 574, microfiche. Full citation for Fisher not available.

[10]Kieran Egan, Teaching as Storytelling (Chicago: University of Chicago Press, 1986), 2.

[11]Donna E. Norton, Through the Eyes of A Child: an Introduction to Children's Literature (New York: Merrill/Macmillan Publishing Company, 1991), 187-189.

remember that story,[12] but these images do not have to be provided by a book. Some illustrations (as I will discuss later) do not provide any new ways of seeing, nor do they require mental activity from the viewer. We look at them almost as passively as we watch television. In addition, an illustration essentially freezes one moment of a story. Our own images flow with the ongoing story, bringing the story more life. As an experiment, I and a group of fellow environmental educators tried the following exercise: one of us told a very short story. Half of us tried to remember the story verbatim, actively trying to keep images out of our minds. The other half of the group did not pay strict attention to the words, instead visualizing the events and characters. Afterward, each group tried to re-tell the story. Those of us who worked to remember only the words told a sparse story, and often could not finish it. Those of us who had images for the story could tell it completely, and enrich it with detail. Our own mental illustrations helped us remember the story.[13]

Both of these types of images can teach. Either we ourselves construct an image, or the illustrator attempts to illuminate the story, giving it depth. If either we or the illustrator do this well, then "the listeners, the storyteller, and the story itself, converge to create images that participants will take with them – images that can change their perception of experience. The moment the old perception collides with the emotionally charged, story-nurtured new perception, experiential education happens."[14]

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[12]Thomas Armstrong, In Their Own Way (New York: Jeremy P. Tarcher/Perigee, 1987), 19-22. Here he summarizes Howard Gardner's theory of seven different types of intelligence, and contrasts linguitic and logical-mathematical intelligences with visual/spatial intelligence.

[13]Images can also deeply affect how we relate to a story. Different people conceptualize stories differently. For example, a friend of mine, Deborah Holtzman, who is an editor at Holt Rinehart Winston, is uncomfortable seeing movies when she has previously read the corresponding book. She finds that the film images often clash with her own, and this can change her perception and enjoyment of the story.

[14]Lana S. Leonard, "Storytelling as Experiential Education," Journal of Experiential Education 13 (2) (August 1990): 14.

Emotion

Overall, stories make sense to us on both cognitive and affective (emotional) levels. We react to the "facts" of a story: who, what, where; *and* the mood, the emotional content. "Stories ... are about how people feel," and about those feelings as motives or as point and result of actions.[15] They use "language charged with feeling"[16] that opens the door for knowledge, letting "facts" come in to our minds through and reinforced by our hearts.[17] One of the ways those facts come through is through identification. Children can identify with the characters in stories, i.e. try on a role for a time. Children may not have the ability to cope with or care about something that affects the world beyond their lives. Nor may they have the opportunity to acually experience such events. These "vicarious experiences ... result in personal development."[18] However, if I teach children about some expereience or idea in a way that *is* within their scope, in a way that presents that something in a manageable package, they will have some experience to draw on it later.[19] Logically, this preparation may be more than providing only concepts and methods of action, but can include the philosophies behind taking such action.

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[15]Egan, 26.

[16]Rafe Martin, children's author, quoted by Fran Sylvester, "Once upon a time...," Instructor 97 (2) (September 1987): 36.

[17]See Egan, 30; and Louis A. Iozzi, "What research says to the environmental educator: environmental education and the affective domain," Journal of Environmental Education 20 (3), 3-9; and 20 (4), 6-13.

[18]Norton, 2.

Please note that I am not advocating replacing real-life expereiences with stories. I am simply suggesting that sometimes the story can introduce such expereiences, or provide the background from which we can understand them. And in some cases, we do not have the opporunity to engage in some adventures, in which case, stories are as near as we can come.

[19]Elizabeth Nesbitt, "Hold to That Which is Good," Horn Book Magazine (January-February 1940): 14, cited in Augusta Baker and Ellin Greene, Storytelling: Art and Technique (New York: R.R. Bowker Company, 1977), 17.

What Stories Teach

What specifically can I teach with stories? According to Fran Sylvester, a storytelling fifth grade teacher, "Storytelling combines listening skills and imagination with the nuances of language, history, culture, and values."[20] In a general sense, stories demonstrate by the actions and perceptions of characters certain skills, knowledge, connections between people, patterns or interactions, events and behavior, and ethical values.

Skills

Bicknell and Trotman list several reasons for telling stories, mostly reasons based on skills developed by story-listeners:

> To help children learn to listen.
> To enlarge the listener's vocabulary.
> To extend a child's knowledge of the worlds of fact and fantasy.
> To stimulate the listener's imagination.
> To create an appetite for words.
> To introduce the shared activity of storytelling.[21]

Listening, a wider vocabulary, imagination, and appetite for words are all skills that have value in the school, but also are useful in any communication, and in any connection-building activity (of which storytelling – where there is a link between listener and teller – is one). Thus storytelling is a way to practice communicating.[22] We need to be able to express ourselves, and to be able to listen and pay attention to what others say. These skills in turn affect our abilities to comprehend and evaluate information.

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[20]Sylvester, 41.

[21]T. R. Bicknell and F. Trotman, eds., How to Write and Illustrate Children's Books and get them published (Cincinnati: Quarto Publishing, NorthLight Books, 1988), 9.

[22]Sylvester, 35.

Communication

Exposure to and involvement with stories develops a child's ability to use language.[23] The greater a child's exposure to stories the greater her ability to use language to express herself.[24] Picture books are one of the first steps in this process. They relate visual information to verbal,[25] creating the bridge between familiar image and oral representation of that image.

It is not enough to only be able to express yourself to communicate with another; you must be able to hear the other. As such, any practice we get in listening attentively can serve us well in our need to comprehend someone. Storytellers ask their audiences to do just that. According to Farrell and Nessel's research in the educational use of storytelling, this works: "teachers noted that the frequent story times greatly helped children learn to listen attentively."[26] Just as importantly, stories are not sound bytes; listeners (or readers) must be able to maintain that attention in order to obtain a continuous understanding of the tale. I in turn need to make sure that the stories I choose fit my students' abilities to pay attention.

Interdisciplinary Comprehension

Listeners must hold the chain of events in their heads and relate those pieces to the whole to make sense of the story. This requires a many-leveled understanding, a way of thinking similar to an interdisciplinary comprehension. Many educators (myself included) try to create learning situations that no longer just teach isolated details, but require

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[23]Norton, 8; Baker and Greene, 20.

[24]See Farrell and Nessel, 7, 11-12; and Tallant, 1.

[25]Norton, 3.

[26]Farrell and Nessel, 18; see also Baker and Greene, 20.

students to draw on the tools once learned in narrow disciplines,[27] previously rarely used to integrate those disciplines. We seek to teach the links "between students' lives and the subject matter, between principles and practice, between the past and the present."[28] Stories demonstrate these links. Those stories that have common plot elements, themes, metaphors, and images lend themselves well to developing the ability to perceive those similarities and patterns. Ultimately, I hope that the abilities to perceive commonalities and to draw on a wider range of thinking will help my students become good problem solvers and critical thinkers.

Imagination

Despite the wish to help students develop problem-solving abilities, research so far has not really focussed on imagination as a tool for that ability.[29] Storytelling can develop these skills; the increase in the "knowledge of the worlds" can increase children's sense of what is possible.[30] Farrell and Nessel looked at the results of regular storytelling on children: groups of children exposed to stories developed a "sense of story" that let them "predict outcomes and invent new ones," while students not exposed to stories could not.[31]

Why would this happen? Stories, especially told stories, rely on the listeners' imaginations to be complete. As I mentioned before, illustrated stories can only provide isolated moments. In order to coonect those moments, "children ... supply their own inner

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[27]Interdisciplinary education is a rising theme in current educational theory and curricula. Some interesting articles on the subject include:

[28]David Perkins, "Teaching for Understanding", American Educator (Fall 1993): 8.

[29]Egan, 5-7 and 22.

[30]Sylvester, 35.

[31]Farrell and Nessel, 16-19.

images to match those in the tale. This feeds their powers of visualization."[32] Their imagination them you consider more than what is just told; it fills in the gaps in the story in the same way it works outside the story to imagine what happens in the real world when the child is not present. According to Baker, this ability to create mental pictures is the cornerstone for creative imagination in general.[33] The more children exercise their imaginations, the more easily they can come up with original answers to "How do these relate?" "What happened next?" and "What if?" This is not limited to storytelling: children in Farrell and Nessel's study used these imagination techniques to better understand other subjects. However, to use imagination to understand situations or to solve problems outside of stories does require a sense of how that "outside world" works.

> [C]hildren [therefore] need *at least* two kinds of literature. They need books that portray people living the kinds of life [sic] that they lead themselves [and dealing with real issues], and they need to be taken into other worlds as different as possible from their own in order to stretch their imaginations, or rather, since children's imaginations are usually in better shape than adults', to keep their imaginations supple.[34]

Knowledge

Stories also teach those "kinds of life [sic] they lead themselves." "Realistic" stories provide the opportunity to learn the way things work in the tangible world. "Environmental" stories – the sort I am likely to write and use – would thus show ecological ideas or concepts, and situations where those ideas become important to the plot and characters.

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[32]Armstrong, 91; see also Yvetta George and Barbara Schaer, "An Investigation of Imposed–Induced Imagery methods on Kindergarten Children's Recall of Prose Content," Paper presented at the Annual Meeting of the Mid-South Educational Research Association, Memphis, TN, 19-21 November 1986, 1-2, EDRS, ED 278 974, microfiche.

[33]Baker and Greene, 20-21.

[34]Bicknell and Trotman, 51.

Facts

Armstrong suggests that stories can be used to teach specific concepts (he suggests teaching multiplication by telling about 3 sons with "just as much," "twice as much," and "thrice as much" Midas-like powers). But these concepts do not exist in isolation. George and Schaer's research shows that the means by which we present content will affect the ability to recall that content. Because stories show knowledge in relationship to situations and characters, children can see a context for that knowledge. How many times have you heard a child complain that what they were learning in school was not relevant? Stories provide a setting in which facts and processes have relevance.

What about stories with specific ecological concepts, i.e. stories with the kinds of content I want to teach? Let me tell a story to make this point. When I was about 9, I read a Ranger Rick article about bald eagles becoming endangered by DDT and its effects on eggshells.[35] While I still do not know the detailed processes behind how the chemical affects the eggs, I have neither forgotten the general relationship between DDT and population (ingestion through prey affects reproduction and thus population) nor the impact (endangerment). This is what I call factual ecological knowledge, but I remember it because it made sense in the context of the story about bald eagles. And I remember the story because it had an emotional impact on me: I thought that the bald eagle was basically gone from the lower 48, and I grieved because I thought I would never see one. I kept that idea despite having worked in a raptor center in Ohio; I suppose it never came up. When I moved here to Montana and saw one flying in the wild, I cried. That emotional impact lets us keep and remember the knowledge presented in the story.

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[35]I do not have a citation for this; my family received Ranger Rick off and on from 1970 to 1983 or so, and I suspect i read this article before I turned 10, so it probably appeared sometime between 1974 and 1977.

Models for Action

Despite knowing one of the reasons bald eagles were in trouble, despite caring, I never did anything about it. Simply knowing the facts of that one situation was not enough for me to do anything (even after I was old enough to choose pesticide-free food); in general, studies indicate that facts are rarely enough to fuel people to action.[36] On occasion, providing information alone actually has a negative effect; listeners feel overwhelmed and helpless. They have no context in which to use that information constructively.[37] This defines another role for environmental stories: to provide encouraging examples of people *using* their knowledge. In this way we can teach children various means of applying knowledge. Bardwell calls this type of story "success stories."

> Success stories ... provide examples with which people can begin to build models of alternative approaches and the contexts in which they work.... [The reader or listener] should finish with a sense of how the activist's perceptions of the problem precipitated his or actions and what strategies and even setbacks were encountered....
>
> [P]eople may need a number of success stories to begin to build models. ... [A]fter reading or hearing several stories describing different approaches ... one begins to see patterns....[38]

Values

"[C]hildren's literature *never has been neutral*,"[39] so there is no point in complaining that the stories we tell should be value free. Stories, as Baker sees them, have everything to do with values. "Storytelling brings to the listeners heightened awareness – a sense of wonder, of mystery, of reverence for life. ... It is the primary purpose of storytelling, and all

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[36]See Iozzi, n. 3; and H. Hungerford and Trudi R. Volk, "Changing Learner Behavior through Environmental Education," Journal of Environmental Education 21 (3), 8-18.

[37]Bardwell, 9.

[38]Bardwell, 8-9.

[39]Bicknell and Trotman, 45.

other uses and effects are secondary."[40] That sense of wonder and empathy are the most basic values that environmental education strives to teach. We – I – want students to view the whole world with delight, wonder, and affection. However, these are not enough without a sense of responsibility.

Because "environmental problems and issues are largely moral ones, [I need to] help students develop moral maturity as it relates to environmental problem solving and decision-making."[41] Various techniques exist for developing that moral sense, and Caduto outlines many of these.[42] Of his list, stories can easily play a role in the following methods: Inculcation, where children identify with a character who has a certain ethical code and thus adopt that code; Confluent Education, in which a story can offer "subject matter which is closely related to the significant personal needs and feelings of the learners;" and in Moral Development, where stories can provide situations of moral conflict and choice. Hunsinger states that "Ethics ... is [sic] established by a dynamic process of communication. The formulation of an ethical code is both and intra and interpersonal process...."[43] Those communication skills that storytelling develops go hand in hand with ethical development.

Role Models as a Source of Values

According to many child development theorists, very young children act in imitation of what they see and hear. They rely on external authorities for ethical decisions.

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[40]Baker and Greene, 17.

[41]Iozzi, n. 4: 8

[42]Michael Caduto, "A Review of Environmental Values Education," Journal of Environmental Education, 14 (3) (Spring 1983): 13-21.

[43]Paul Hunsinger, "Methodologies of Teaching Communication Ethics," Paper presented at the Annual Meeting of the Speech Communication Association, (Louisville, KY, November 4-7, 1982), EDRS, ED 222 929, microfiche, 1.

Roughly around puberty, they begin to develop their own moral codes.[44] Characters and storytellers model behavior, and the treatment of a character within both the plot and the description tells the listeners and readers how to connect with those characters, and tells the audience something about the values behind that behavior. As an example of this imitation of characters, my youngest sister changed her name because of a story. We had always called my sister Kaile, although her full name was Ariel Kaile. After seeing and hearing Disney's *Little Mermaid,* Kaile asked us to call her Ariel. She wanted to imitate the main character of the movie. This desire or instinctive ability to imitate fictional characters means we have to choose carefully what stories and images we let our young children see and admire. If we want our kids to learn "good" values early, we need to present them with stories (and real life situations) that express those values in action.

Not all researchers feel that behavior models are required for values teaching. For them, it is not the example of a successful resolution of a problem by characters that is important, but the perspectives we develop from observing and empathizing with those characters.[45] I recently re-read a story that I loved when I first read it in 6th grade. At that time, I identified strongly with one of the characters and wanted to learn the sorts of things she was learning. Apparently, I achieved this; while reading I realized I now hold many ethical beliefs and ideas about the role of innocence and knowledge that this character has. My identification with some of these characters allowed me to internalize some of their value system.

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[44]See almost any work by Rudolf Steiner; Brien Masters, ed., An Introduction to Rudolf Steiner-Waldorf Education (Gloucester, UK: Wynstones Services, Ltd., 1986), 4; Michael Caduto, "Toward a Comprehensive Strategy for Environmental Values Education," Journal of Environmental Education 14 (4) (Summer 1983): 12-18.

[45]Robert Coles, The Call of Stories: Teaching and the moral imagination (Boston: Houghton Mifflin, 1989), cited in Leonard,12.

Connections and Community Values

Stories are also supposed to "increas[e] awareness of the way in which the world is full of [different] plots and characters."[46] They make the listeners think about the ways other people perceive, react to, and explain events.[47] Stories give us a means of seeing our positions within the larger human drama, and the chance to look at that position through someone else's eyes. A story lets us rise above our own patterns of thought, consider other people, their values, and motivations in the light of the story, and step away from our own biases.[48]

Baker and Greene suggest that imagination is a key to this empathy. A child's ability to imagine lets her perceive situations from alternate perspectives.[49] Hence, stories that develop imagination and imspire ethical reflection foster understanding between people. It is these interactions and these experiences of commonality that build the ties we need to create community. Moral values have direct bearing on what we train children to become with respect to community.[50] Ifl want children to value and learn empathy and understanding of alternate perspectives, then I need to provide stories and opportunities to develop those qualities.

Ethics of Change

That aspect of stories that lets people "escape from the narrow viewpoints the

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[46]Bicknell and Trotman, 50-51.

[47]Sylvester, 35.

[48]Leonard, 12.

[49]Baker and Greene, 21.

[50]Caduto, "Toward a Comprehensive Strategy," 12.

world is always trying to thrust upon them"[51] goes hand in hand with stories' ability to offer models of action and therefore change. While "storytelling has always been a means of passing on traditions and codes of behavior,"[52] "any writer or artist can move things on a bit by creating new images and stimulating new ideas. It is not their job to endorse the *status quo*."[53] Presenting possible types of action in a context that lets us identify with those engaged in that action, no matter how far that action is removed from us, gives us a connection to that new way of doing things. Because I am dealing with children who are meeting some ideas, models, for the first time, I can use stories that have certain kinds of actions (such as kindness, paying attention to ecological health, whatever) as the norm. Newhouse suggests that "If a social norm for responsible environmental behavior existed, more people might behave responsibly, even if they did not have strong attitudes about environmental protection."[54] From my perspective, if I have stories that present environmentally sensible behavior as the norm, and my students identify with and imitate those characters, then they will model that behavior, even if (at first) my stories have not effected a deeper change in their values.

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[51]Ed Brody and Michael Punzak. "Introduction: Stories can make a Difference," 3, in Spinning Tales, Weaving Hope, The Stories for World Change Network (Philadelphia: New Society Publishers, 1992), 3-4.

[52]Bicknell and Trotman , 9.

[53]Ibid., 49.

[54]Nancy Newhouse, "Implications of Attitude and Behavior Research for Environmental Conservation," Journal of Environmental Education 22 (1) : 27.

Beyond the Theory and Excuses for Use: Some actual Stories

Given then, that stories *can* be used to teach, what makes a *good* environmental education story? Leonard suggests these characteristics: "it invites interpretation but does not provide it; allows room to speculate on meanings and outcomes; does not prescribe or judge, but provides characters, problems and possible situations with which to identify."[55] To summarize Baker and Greene,[56] a story one chooses to simply tell should possess the following characteristics: have a clear theme, plot, and resolution; have movement, drama and action that carry the story rather than description and thoughts; have "good" values that are implicit, not preached; have a vivid style; and be audience appropriate. They also suggest "vivid word pictures," but I would say image-rich, to leave room for illustrated stories. These criteria apply equally well to selecting a story for teaching, but they are not complete.

Iozzi says that "all children benefit from similar types of environmental education learning regardless of ... age ...."[57] This may be true, but it does not mean that we can use the same stories with any age, however. Children are not ready to deal with certain issues until certain ages[58] (although exactly when which kids are able to deal with which things will vary). In writing or telling a story that is designed to teach a person how to cope with a situation, or to provide a model for problem-solving, I have to consider the age and background of the child.[59] The story needs to be appropriate to the audience, in that it

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[55]Leonard, 12.

[56]Baker and Greene, 27-28.

[57]Iozzi, n.. 4 : 10.

[58]Bicknell and Trotman, 49.

[59]Newhouse, 30.

should neither be excruciatingly simplistic, but should not be beyond their comprehension.

Since I want to teach in such a way as to provide both knowledge and values, I also need to choose stories that provide at least accurate ecological pictures if not necessarily complete ones, and also support the values I want. With these criteria for evaluation, let me consider some stories that I might possibly use. These stories see fairly widespread use among the environmental educators I know.

The Wump World written and illustrated by Bill Peet.

Story: Humanoid aliens (Pollutians) colonize a small world with one species of herbivore (Wumps). These people transform and poison the place. Rather than taking responsibility for their mess, they leave. The herbivores hide while the aliens pollute the planet, and come out of hiding after the aliens leave.

Art: The illustrations are simple, with an unvarying perspective. They seem to be ink and colored pencil. The characters do not develop or change their viewpoints; neither do the illustrations. Scenes of the Pollutians are darker and muddier in color than most scenes with the Wumps, and progressively get darker during the story. This is the only stylistic change in the art. The pictures follow the text, but the text could stand alone without them.

Age: Young. I estimate 4-8 or so; simple pictures, simple story-line. However, the story is fairly long, so it requires children with some attention span.

Ecological accuracy: The planet is ecologically implausible; it has only one species of herbivore, and a few species of plants and fungi. The surface-dwelling, plant-eating wumps change their ecological niche sufficiently that they survive the invasion by living in caves and eating fungi. This is an unlikely response by any non-omnivorous

species (and unliekly for manyomnivores as well). While some simplification or glossing over of ecological details can be useful, this story has simplified ecology to a meaningless level.

Values presented: This story presents a thinly disguised allegory to our current situation. Pollutians (aliens/humans) enter a pristine environment, nearly destroy it, and leave. The environment recovers without our help or hindrance, but never to the state in which we found it. This implies that humans are incapable of treating a place gently and incapable of cleaning up their mess. Frequently both implications have come true, but this does not offer alternative behavior patterns for us. Because humans come from *outside*, the story also presents the idea that humans are separate from and incapable of harmonizing with a "natural" environment. Humans are the bad guys. We are not supposed to like the humans, nor act like them. We *are* supposed to sympathize with the wumps (nature), who hide and get sick. Yet these characters are completely passive in the face of trouble. If we are to use them as role models, they teach us that if we cower and hide, eventually the bad things will go away.

I will not use this story. It does not provide a positive role for dealing with situations, nor does it provide ecologically useful content.

Crow and Weasel by Barry Lopez

Story: Two young men journey to a place where no one they know has ever been. Traveling teaches them about themselves; about relationships with other people and the whole environment; about loving fellow creatures, and appreciating beauty. This learning changes them and they way they conduct these relationships with their world.

Art: Most of the watercolor illustrations in this story add to it. In some places, they merely

provide a visual version of the action, but in others they deepen the mood or provide details that the text does not. They do shift the distance between viewer and subject of picture, more than those in The Wump World. The illustrations do not, however, reflect the transformations that the characters go through. These transformations are internal, within the characters, but they are also transformations in the way the characters perceive the world. Because of this, I think the story could survive without the pictures, but some of the richness would be lost.

Age: preteens and older, and I would not read it to someone younger than perhaps 6. It is relatively long, requiring a long attention span, preferably one that can hold a thread for several days, as I would be uncomfortable reading this in one sitting..

Ecological Accuracy: While the book does not specifically depict physical ecological relationships, the world around the travelers is clearly a complex, functioning one. The ecological picture is skimpy, but not unrealistic. While "Crow" and "Weasel" are the characters' names, they are not anthropomorphic animals, but humans with those names, and perhaps some allegorical attributes of those animals.

Values: The protagonists – people we should understand, identify with – are always learning, sometimes making mistakes, and changing in response to what they have learned. They actively participate in their world, although it changes around them as they travel. Some of the things they learn: to thank and show respect to that which supports you; to not expect everything will be given to you; to pay attention when it is time and only speak when it is appropriate, and without pretending to know more than you do; to learn from others, and to respect their individual talents and differences; to love beauty; to think things through; to develop your own skills well without coveting others' gifts. These characters have a depth and degree of similarity to each of us that

makes them excellent role models.

Whether I used this story would depend very specifically on my current goals. I would read this story to children who are in the process of changing or evaluating their beliefs. By and large, that means I would use it with children above age 10. If I wanted my students to learn exclusively "hard, factual" ecological relationships, I would not choose this story.

The Salamander Room by Anne Mazer, illustrated by Steve Johnson

Story: A child finds a salamander in the forest and brings it home. In order to make sure the salamander is happy, the child must change his room until it completely mimics the wild.

Art: The illustrations here dramatically change the story being told. The text is primarily a dialogue between the child and his mother, but the pictures sometimes show the viewpoint of the salamander, sometimes the boy or his mother, and sometimes the viewpoints of the other forest creatures. It does this by changing where we, the viewer, are in relationship to the picture: sometimes we are very small and close in, so that the child is very large. Sometimes we are high above the changing room, looking at it from the perspective of a bird. And occasionally we are the traditional distance from the subject, in the position of a grown-up standing back and watching.

The text alone is a different story than the illustrations alone. The text tells us about the processes, that habitat needs, while the pictures draw us in to empathize and identify with the various creatures mentioned by the story. In this sense, they complement each other. The text provides the information to understand the pictures, while the pictures connect us to that information by placing us literally within the

story. This technique strikes me as very useful, because not only does in enrich the story, but this way of telling two complementary stories requires the readers to think in two complementary ways: linguistically or linearly, and visually and holistically.

Age: Young children, ages 2-7. It is primarily a picture book.

Ecological accuracy: Step by step, the story connects the needs of one creature to the needs of many creatures, and the necessity for a complex environment that fits those needs. While there is a degree of fantasy in the story, i.e. changing a bedroom into a forest habitat, the story does show the relationship of each piece of the ecosystem (or micro-ecosystem) to other pieces, although it does not include all possible pieces (there is no need to). The salamander does have some human-like needs or wants: where will it play, who will it play with, but not only do these serve the needs of the story and the values it presents, but we also do not know that a salamander does *not* have those needs. This is a very broad ecological picture, but I would use it for young children who may not have a firm grasp on how the parts of the world fit together.

Values: The story shows that adopting an animal from the wild means you must be able to fill all of its needs. The clear similarity between the child and the salamander (they both play, sleep, have friends, eat,) builds an empathic connection between humans and animals (even "little slimy ones"). The child wants to take *good* care of his salamander friend, and discovers, in doing so, that the only way to do this is change his room into the forest. On top of this, the story has the *child* choosing how to change his room, providing the answers to the mother's questions of how he will keep the salamander happy. That has the nice effect of indicating that children do have answers to things; they do not always have to have someone else telling them the answers. The child is figuring out for himself how to make this work, building (to borrow Hungerford and

Volk's phrase) his own "internal locus of control."

I would use this story to teach both empathy and interconnectedness.

The Lorax written and illustrated by Dr. Seuss

Story: A faceless businessman (Once-ler) moves into a pristine area, and begins taking the trees (or parts of them) for his own use. This taking is opposed by a nature spirit (Lorax). The argument of these two main characters portrays in dialogue the resulting destruction. At the end, when the ecosystem is completely destroyed, the businessman repents, and admits that the nature spirit was right, and asks the audience to take on the responsibility that he was unable to. Dr. Seuss tells this story in vivid rhyme, making up words whose sound carries some indication of the meaning.

Art: The illustrations here are very stylized and artificially colored. They are cartoon-like, flat and without complexity or much detail. There is some shift in coloring: the destroyed world is purple, brown, gray and deep blue; the healthy ecosystem is light blue, pink, yellow, and bright green. This color changes produces a shift in mood, and the last page, where the Once-ler asks "you" to take responsibility has much more light in it that any other image of the destroyed world.

I think the story would survive without the illustrations. I say this because I have used it as a play with children. Mostly, I feel the image-rich words make up in some part for a lack of illustration. On the other hnad, the lighting shift between the healthy and ruined ecosystems emphasizes the mood of the story. That dark world is full of regret and sadness, in contrast to the cheerful, joyous colors of the pristine environment. The last page, with its gleam of white, emphasizes the hope in the Once-ler's voice. I do not see this mood shifting in the poem-story itself.

Age: Again applicable to a wide age range; although the initial picture is simplistic, the issues it brings up are not. I have used it from age 3 up; I now (based on my thoughts about the ethical choices presented) restrict it to slightly older children. However, the rhythmical, nonsensical words, in typical Dr. Seuss style, is designed to appeal to young children (and indeed might put some older ones off).

Ecological picture: The ecosystem is simplified, represented by one fish, one mammal, one bird, one plant, air, and water. The story draws connections between pairs of parts (mammals and plants, for instance), does not provide an overall linkage for all the parts. These connections are in implied in the last page, when the businessman suggests that replanting will bring all the species back. This simple act will probably be insufficient, although the emphasis on protecting the new forest suggests there is still hope. In addition, even small simple acts canmake large differences.

The story unfortunately also implies that species can just get up and move (similar to the Wumps in this respect). However, it does show that just one (resource consumptive) industry can affect all aspects of the ecosystem.

Values presented: This story has a direct, unalterable dichotomy between economics (rather, financial greed) and nature preservation, and those with financial motives are clearly the bad guys, since the results of their actions adversely impact defenseless animals. While the businessman ultimately repents, this apparently is due to missing nature, not due to a change that allows the two to coexist. This is reinforced by the main characters who *never* talk, only yell at each other. Kids do not directly notice the lack of communication; they do however usually take the nature spirit's part. If I want to teach kids to be stubborn and stick to their principles at all costs, then the Lorax (the nature spirit) makes a passable model (he still never takes direct action – such as

blocking a pipe or hugging a tree). Since I would rather teach my kids to communicate, to find common ground, this book has no models to offer.

I used to use this story to talk about effects of certain kinds of actions, and I might still use it occasionally with small children. There exist better stories for teaching effects of actions. I would use this story as a cautionary tale to explore the issue of communication between viewpoints.

The Great Kapok Tree written and illustrated by Lynne Cherry

Story: In the Amazon rain forest, one man tell another to cut down a tree. This is tiring work, and the cutter takes a nap. During his sleep, inhabitants of the tree come to him and tell him why they think he should not cut the tree. When he awakes, he begins to cut again, but under the pressure of their reasons and their presence, he leaves his axe and departs the forest.

Art: The vibrant, rich illustrations effectively show the depth and complexity and diversity in the rain forest. However, they do not always portray the reasons the various creatures want the woodcutter to spare the tree. Many of those reasons involve processes (such as carbon dioxide-oxygen exchange by the tree), and those concepts are left out of the pictures. Those are the most abstract parts of the text, and easily the most difficult for children to understand. The pictures do easily portray the reasons for sparing the tree that involve beauty, diversity, and wonder.

In my experience, these pictures also are somewhat distracting from the text. When I have used this with 5-8 year old kids, they delight in searching the pictures for details, letting some if not all of the ideas presented by the story slide past them. This tells me that, like in The Salamander Room, the pictures tell a somewhat different

story than the text. But here, I don't feel that other story quite supports the text one in The Great Kapok Tree. But this variation does let me use the book with a wider age range (see below).

Age: This story works on many levels; while the text is simple, the ideas within can be heard at both simple and complex levels.

Ecological picture: While the story does not provide a lot of depth into broad ecological functioning, it does state that all living things depend on each other, and says that in several ways. It does portray – accurately to the best of my knowledge – a wide variety of species and some of their relationships to the habitat. It does make the point that a tree is many things to many species. I think that while the book is environmentally accurate, that is not its main thrust, and that is why any connections between a given species and the rest of the ecosystem are loosely drawn, if not absent. However, if my goal were to talk about connections, I still might choose this story.

Values presented: The characters provide many perspectives on why this tree should be preserved. The nine or so reasons fall into four categories: the tree is a home (and as such has history, and lives would fall apart without home), it has a role in supporting life besides as a dwelling place, its lack is identical to a loss of beauty, and that cutting this particular tree will have repercussions on the human community as well. All of these have validity, and we do not know which reason most affected the woodcutter. The listeners are invited to consider these reasons and discover which one would convince themselves. In addition, it is clear that the man is choosing for himself; he has chosen to disobey his boss, the first man who told him which tree to cut. While young children might not identify with this grown-up, older children could.

As long as I have audience-specific goals and tailor the reading and possible discussion to that audience, I would use this with any age.

"How Poison came into the World" from Keepers of the Animals by Michael J. Caduto and Joseph Bruchac. While this story is not necessarily well-known, Caduto's and Bruchac's Keepers of the Animals and Keepers of the Earth books are becoming more well-known among environmental educators.

Story: A poisonous plant had no use for its poison, so it gave it to previously defenseless small creatures such as snakes and bees. In exchange for this protection, each small creature agreed to offer warning before using their new poison, and in one case (honeybee) offer its own death should it use the poison.

Art: While there is a pen and ink sketch included with the story, the story is supposed to be told. Visual images must come from within the listeners, and as such will carry listener-specific emotional weight.

Age: This story does not strike me as designed for a particular age. Although I suspect younger children might learn more from it, I have also told it to adults who enjoyed it.

Ecological picture: While obviously an allegorical/mythical tale, the ways the small creatures warn others before using their poison is true to life. In part because of this, I might tell it as a prelude to lesson involving "creepy crawlies" or other "icky bugs."

Values presented: I see three main value-decisions: give away what you do not need, give to/ help the small creatures, and that powerful abilities are not to be used lightly (hence the warning). I do not find any of these blatant, but I do think young children will recognize the last as an aspect of being fair. In addition, because it is a Native American story, it carries a fair bit of cultural weight; the plant gives up its poison in

part because it wanted to have the company of the Choctaw Indians, and the whole idea of a plant being able to make these decisions is a fairly non-Western one.

How do these criteria apply to my story?

Subby Gets Slimed

Story: The story line tells of a small machine/animal (Subby) who accidentally finds herself in the middle of an oil spill. She does what she can to obtain help, assist in clean up, and contemplates how to prevent such disaster. The story has a meta-level, where I offer reference information to augment the text, but that is not directly part of the story.

Art: The art of this story is in progress; I want use various elements of art – color, lines, shape – to highlight the differences between the undersea and the above-the-water environments. I want the art to convey moods of danger and urgency that the text leaves unspecific.

Age: Although I want to write the main story so that 3-6 year old children will understand it, the extra information should make the story interesting to older children.

Ecological accuracy: Ecologically, it will be as truthful as I can make, from accurately depicting species native to the setting, to the descriptions of how to clean up oil spills on water.

Values: I find myself a little bit worried about this. Is it appropriate to attempt to have kids identify with a machine, even if she does have animal and child-like characteristics? I think this implies, among other things, that we can learn from technological devices, but I worry: will children identify with her mechanistic nature, or her curious, helpful, exploratory personality? And does this story offer a useful

model of action? I suspect that it does not do so in the story (although I have a bit at the back that offers action suggestions). I wrote earlier, "if an author puts a problem into a story, that problem must be of a size that the characters can handle if that problem is to be solved by those characters." At present, the spill is stoo big for Subby alone to solve. I want to present spills as too big for one person to solve. However, I still need make sure Subby's role is the primary role.

I find myself wondering, if I had not wanted to work on this project as an extension of something else, is this the story I would have written? Probably not.

Closing Comments

While we have a plethora of anecdotal evidence (stories of storytelling), I was curious what formally researched evidence there was. It may seem foolish to turn away from stories to find out whether stories are worth telling. But I recognized many unspoken assumptions in many of the introductions to books on storytelling, and felt a need to get outside the realm of stories in order to get a better look at them. Yet I could not do that completely; I needed the metaphors and analogies of my own stories to make certain points.

In my own writing and illustrating, it seems clear that noticing ecological accuracy and the obvious value statements (e.g. oil is dangerous so choose less-harmful energy sources) is insufficient. My illustrations need to add to the story in a way text cannot, providing through color, point of view, and othe artistic elements a somewhat separate story that has a synergistic effect with the text. I need also to at least consider the deeper questions behind my story; for example, does the use of a machine as a character imply that

technology and/or only technology can heal damage done by humans?

From this, I see stories are a valid educational tool, but not complete. I can use stories because they package information efficiently, and in so doing, integrate values, communication skills, and models of thought and/or behavior. I am not convinced that what we learn from stories is *easily* transferable to real life. I do think that when we identify with a character, we adopt, at least temporally the aspects and values of that character, and that internalization of traits and ethics can have far reaching effects. In this sense, teaching stories are like much of environmental education: we will not know if we have been successful, if we have taught the right things, until our students began taking on their roles in a community, and responding to ecological issues.

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